

7 mm Rem Mag - Hornady SST 162gr - RS70

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LOT-TO-LOT VARIATIONS OF POWDERS, PRIMER SUBSTITUTION AND COMPONENT CHANGE OFTEN RAISE PRESSURES TO UNSAFE LEVELS. THE USER MUST ASSUME THE ENTIRE RISK OF USING THIS DATA FOR LOADING PURPOSES.

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User Data:	Date:22-Jun-2016	Time:21:50:14	File: *.dat
Comment	620mm barrel - 83.57mm COL - 60.0gr start load - 838m/s - 3026bar		
Cartridge / Caliber	7 mm Rem. Mag.(CIP)	Bullet	.284, 162, Hornady SST InterLock 2
Maximum Average Pressure, allowed	4300 bar	62366 psi. (Piezo CIP)	with boattail
Groove Caliber	7.21 mm	0.284 in.	Bullet Weight
Case Capacity, overflow	5.324 cm³	82.0 gr. H2O	Bullet Length
Case Length	63.5 mm	2.500 in.	Bullet Seating Depth
Cartridge O.A. Length	83.57 mm	3.290 in.	Barrel/Tube Length
Shot Start / Init Pressure	250.0 bar	3626 psi.	Cross Section Area of Bore
			0.4039 cm²
			0.0626 in.²

Propellant type	ReloadSwiss RS 70		
Charge Weight	3.888 gm	60.0 gr.	Load Density
Heat of Explosion, Potential	3950 J/gm	256.0 J/gr.	Energy Density of Charge
Propellant Solid Density	1.6 gm/cm³	404.63 gr./in.³	Used Ratio of Specific Heats cp/cv
Burning Rate Factor Ba	0.411 1/s		Weighting Factor
Burning Function Limit Z1	0.628		Prog.-/ Degressivity Factor a0
Factor b	1.963		Bulk Density
			0.826 gm/cm³
			208.9 gr./in.³
			3264 J/cm³
			53487 J/in.³
			1.2294
			0.5
			0.689
			0.980 gm/cm³
			247.8 gr./in.³

Calculated and Estimated Data:

Bullet Shank Seating Depth	12.45 mm	0.49 in.	Capacity Displaced by Seated Bullet	0.619 cm³	0.0378 in.³
Useable Case Capacity	4.705 cm³	0.2871 in.³	Bullet Travel at Muzzle Exit	572.0 mm	22.52 in.
Loading Ratio("Density") / Filling	84.3 %		Charge Fraction Burnt at Shot Start	1.61 %	

Predicted Data:

Maximum Chamber Pressure	3026 bar	43888 psi.	Bullet Travel at Pmax	73.4 mm	2.89 in.
at Muzzle Exit:					
Bullet Velocity	838.5 m/s	2751 fps.	Pressure at Muzzle	828 bar	12003 psi.
Bullet Energy	3690 Joule	2722 ft.lbs.	Bullet Barrel Time	1.392 ms	
Propellant Burnt	99.1 %		Ballistic Efficiency	24.0 %	

Check Loading Manuals for Safe Minimum Charge Weight to Avoid Hazardous Ignition Conditions like Secondary Explosion Effects !

Real maximum (peak) of pressure is reached while bullet moves within barrel.

End of combustion occurs after the bullet's base passes muzzle.

Table of incremented charges ranging from +10.0% to -20.0% of above specified charge

D A N G E R ! : Table data may exceed maximum average pressures ! Pressures exceeding SAAMI or CIP specs are printed underlined!

Diff. %	Charge Weight Gramm	Grains	Muzzle Vel. m/s	fps	Muzzle Energy Joule	ft.lbs	Max. Pressure bar	psi	Muzzle Pressure bar	psi	Prop.Burnt %	B_Time ms	L.R./Filling %
-20.0	3.11	48.0	672	2204	2368	1747	1683	24414	640	9284	89.6	1.777	67
-18.0	3.19	49.2	688	2258	2486	1834	1785	25892	663	9611	90.9	1.737	69
-16.0	3.27	50.4	705	2312	2608	1923	1893	27458	685	9929	92.2	1.698	71
-14.0	3.34	51.6	722	2367	2733	2016	2007	29115	706	10238	93.4	1.660	73
-12.0	3.42	52.8	738	2422	2861	2110	2129	30874	726	10535	94.6	1.622	74
-10.0	3.50	54.0	755	2477	2992	2207	2257	32736	746	10819	95.6	1.585	76
-8.0	3.58	55.2	772	2532	3127	2306	2393	34704	765	11089	96.5	1.550	78
-6.0	3.65	56.4	789	2587	3264	2407	2538	36805	782	11344	97.3	1.515	79
-4.0	3.73	57.6	805	2642	3404	2510	2691	39027	799	11582	98.0	1.473	81
-2.0	3.81	58.8	822	2696	3546	2615	2853	41384	814	11802	98.6	1.431	83
Nominal	3.89	60.0	838	2751	3690	2722	3026	43888	828	12003	99.1	1.392	84
+2.0	3.97	61.2	855	2805	3837	2830	3209	46546	840	12184	99.5	1.354	86
+4.0	4.04	62.4	871	2859	3985	2939	3404	49373	851	12344	99.8	1.317	88
+6.0	4.12	63.6	888	2912	4136	3050	3611	52377	861	12482	100.0	1.282	89
+8.0	4.20	64.8	904	2965	4287	3162	3832	55576	869	12597	100.0	1.247	91
+10.0	4.28	66.0	920	3017	4440	3275	4066	58979	876	12701	100.0	1.214	93

Results caused by ±3% powder lot-to-lot burning rate variation using nominal charge

Data for burning rate increased by 3% relative to nominal value :													
Nominal	3.89	60.0	853	2798	3818	2816	3209	46542	824	11953	99.8	1.357	84
Data for burning rate decreased by 3% relative to nominal value :													
Nominal	3.89	60.0	823	2699	3553	2620	2851	41344	826	11976	97.9	1.431	84